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NL-5600 AP Eindhoven (NL)**(54) **A method and a device for sorting objects according to destination.**

(57) The invention relates to a method for sorting objects provided with address indications according to destination. The objects are placed on a transport system and supplied to various destination stations, in which the objects are delivered in accordance with the address indication. The transport system is equipped with a control system, which regulates the displacement of the objects in dependence on address indications given to the objects, for which purpose the address indications of the objects are detected by means of at least one camera near the supply end of the transport system. The address indications are successively displayed on one or more display screens and on the basis of the address indication of an object displayed on the display screen(s) information is fed to the control system, based on which information a respective object is discharged at the desired destination station.

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The invention relates to a method for sorting objects provided with address indications according to destination, wherein the objects are placed on a transport system, which supplies the objects to various destination stations, in which the objects are delivered in accordance with their address indications, for which purpose the transport system is equipped with a control system, which regulates the displacement of the objects in dependence on the address indications the objects have been provided with.

With known methods of the above kind the objects are for example placed on one or more feed belts forming part of the transport system, and the operators present at that location input information to the control system in dependence on the address of the object in question, in order to effect that the transport system, controlled by the control system, supplies the object to the correct destination station, which is for example made up of a discharge conveyor, a discharge chute or the like.

Said inputting of information to the control system at the location where the objects are placed on the transport system has several drawbacks.

Thus the staff generally work in an environment which is unfavourable as regards the work climate, since such transport systems are usually disposed in large halls, in which also the vehicles carrying the objects on and off drive around. In addition to that a varying supply of objects may cause congestion, since there are delays in the input of information. Possibly this has to be met by bringing in extra staff, which is also disadvantageous.

According to the invention the objects are successively registered by the control system near the supply end of the transport system and the address indications of the objects are detected by means of at least one camera, whereby the address indications are stored in a buffer memory and successively displayed on one or more display screens, and on the basis of the address indication of an object displayed on the display screen(s) information is fed to the control system, based on which information a respective object is discharged to the desired destination station by the control system.

When using the method according to the invention the objects can be placed on the transport system and be passed on continuously, whilst the address indications are successively fed to a processing station, where the address indications can be processed in a quiet environment and be fed to the control station in the form of further information, in order to have the object delivered to a destination station at the correct location.

According to a further aspect of the invention a particularly suitable apparatus for sorting objects provided with address indications according to destination, provided with a transport system, which is equipped with a control system by means of which ob-

jects can be passed to a desired destination system, can be obtained when at least one camera is disposed near the supply end of the transport system, which camera is coupled to a display screen via a buffer memory, and equipment is provided by means of which information can be fed to the control system of the transport system on the basis of that which is displayed on the screen.

The invention will be explained in more detail hereafter with reference to an embodiment of the construction according to the invention diagrammatically illustrated in the accompanying Figures.

Figure 1 diagrammatically shows a transport system according to the invention.

Figure 2 diagrammatically shows the supply end of the transport system, with cameras disposed at that location and equipment coupled to said cameras.

Figure 3 is a diagrammatic elevational view of a display screen, wherein a possible processing of address information is indicated.

As shown in Figure 1, a transport system may be provided with a number of conveyors or feed belts 1 - 5, on which objects 7, such as parcels or the like, for example supplied with vehicles 6, are placed e.g. by operators. Said feed belts are connected to a main conveyor 7, by means of which objects can be supplied to one of a plurality of destination stations 8 connected to said main conveyor 7. Said destination stations are for example made up of conveyors, chutes or the like, and from these destination stations 8 the objects sorted according to destination may for example be carried off by means of further vehicles 9.

Guide means known per se are provided for discharging the objects from the main conveyor 7 to the destination stations 8, which guide means can be activated by a conventional control system forming part of the transport system, which responds to codes given to the objects.

With the device according to the invention the objects 10 supplied are detected by cameras 11, as schematically indicated for three conveyors or feed belts 1 - 3, whereby the presence of said objects is registered in the control system, whilst at the same time the address indications are fed to a logic system 12 for processing and possibly temporary storage in a buffer memory.

The address indications, which may have been temporarily stored in the buffer memory, may be successively fed, said succession corresponding with the detection of the objects 10 by the cameras 11, to display screens 13. As is thereby indicated in Figure 3, the logic system 12 may thereby be designed in such a manner that an address taking up a position not suitable for direct reading, as shown on display screen 13', is turned into a position in which the address is readily readable, as shown on display screen 13'', and possibly also enlarged, as shown on display screen 13'''.

On the basis of the address indication thus made readable operators can feed information to the control system 7 by means of keyboards or other data input equipment, which information is coupled to the previous registration of the object by the control system, all this in such a manner that said object, which has moved along over the feed belts and/or the main conveyor 7 during the above-described processing of the address indication, can be discharged at the correct destination station 8.

As is furthermore indicated with the branch 14 in the logic system 12 machine-readable address indications may be directly input to the control system of the transport system, so that said address indications do not appear on the display screens of the operators, but that only the addresses that cannot be machine-processed appear on said display screens, which addresses may then be converted by the operators into data suitable for the control system of the transport system 7, to be subsequently input to said control system.

As is furthermore diagrammatically indicated in Figure 1, the operators using the display screens may be accommodated in a screened-off room 15, at some distance from the entire transport system, so that they are screened from any interfering influences.

When the system according to the invention is used it is possible not only to obtain a pleasant work climate for staff occupying themselves with the address indications, but also a faster processing of the products, since the detecting of the products, the determining of the correct address and the inputting of the required information to the control system by means of the correct address may take place while the objects are moving from the supply end of the transport system formed by one or more conveyor belts or the like transport means 1 - 5 in the direction of the destination station 8.

Claims

1. A method for sorting objects provided with address indications according to destination, wherein the objects are placed on a transport system, which supplies the objects to various destination stations, in which the objects are delivered in accordance with their address indications, for which purpose the transport system is equipped with a control system, which regulates the displacement of the objects in dependence on the address indications the objects have been provided with, characterized in that said objects are successively registered by the control system near the supply end of the transport system and the address indications of the objects are detected by means of at least one camera, whereby the

address indications are stored in a buffer memory and successively displayed on one or more display screens, and on the basis of the address indication of an object displayed on the display screen(s) information is fed to the control system, based on which information a respective object is discharged to the desired destination station by the control system.

2. A method according to claim 1, characterized in that said address indications may be turned automatically in order to display the address indication on the display screen in a position suitable for easy reading.
3. A method according to claim 1 or 2, characterized in that said address indication may be displayed in enlarged form on the display screen, in order to improve its readability.
4. A method according to any one of the preceding claims, characterized in that machine-readable address indications are used directly for inputting information to the system with regard to the desired destination station.
5. An apparatus for sorting objects provided with address indications according to destination, provided with a transport system, which is equipped with a control system by means of which objects can be passed to a desired destination system, characterized in that at least one camera is disposed near the supply end of the transport system, which camera is coupled to a display screen via a buffer memory, and equipment is provided by means of which information can be fed to the control system of the transport system on the basis of that which is displayed on the screen.

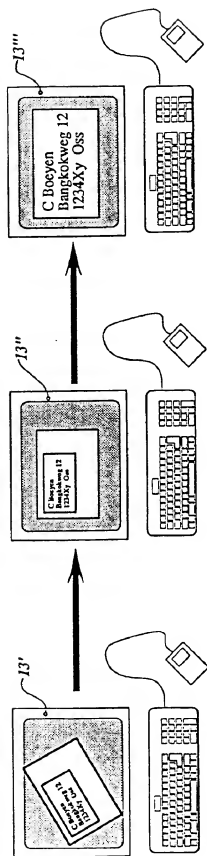


Fig. 3

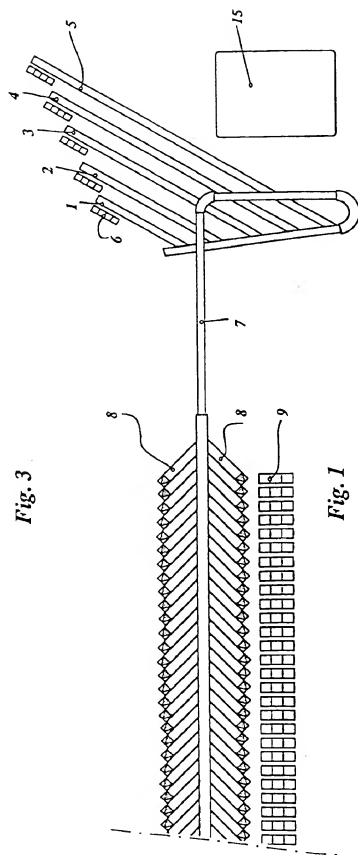


Fig. 1

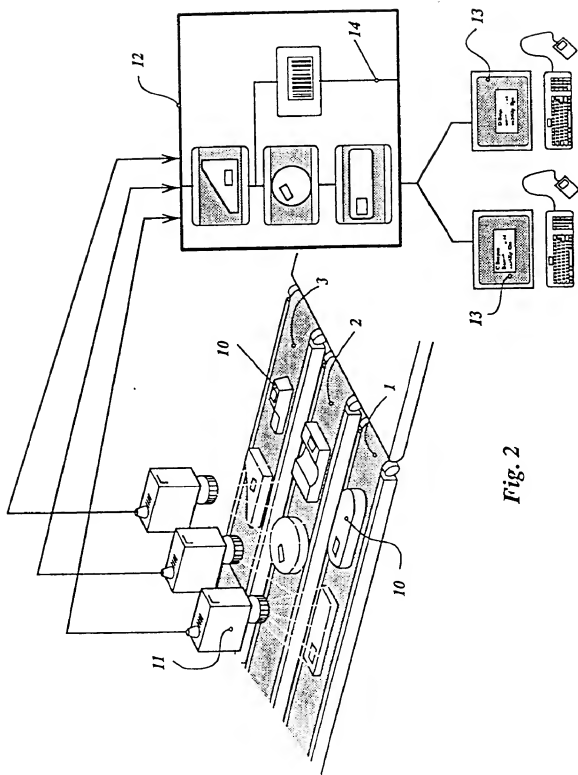


Fig. 2



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 94 20 0016

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
X	FR-A-2 577 151 (TISSMETAL LIONEL-DUPONT) * the whole document *	1, 2, 4, 5	B07C3/20
Y	---	3	
Y	DE INGENIEUR vol. 87, no. 17, 24 April 1975, NEDERLAND pages 342 - 344 MEYER-BROTZ ET AL 'EEN AUTOMATISCH POSTSORTERINGSSYSTEEM' * page 344, paragraph 1; figure 7 * -----	3	
			TECHNICAL FIELDS SEARCHED (Int.Cl.5)
			B07C
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 30 March 1994	Examiner Forlen, G
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X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application I : document cited for other reasons A : member of the same patent family, corresponding document	

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